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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,618	09/18/2003	Bun-Yeoul Lee	MUTU11.00CP1	1209
20995	7590	04/26/2004	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			PASTERCZYK, JAMES W	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/666,618	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> J. Pasterczyk	<b>Art Unit</b> 1755	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9/18/03.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 and 11-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-10 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/526,035.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. This Office action is in response to the filing papers of 9/18/03 indicating this case is a CIP of its ancestor.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-3 and 11-14, drawn to chemical compounds, classified in class 556, subclass 52 inter alia.
- II. Claims 4-10 and 15-20, drawn to catalyst precursors, classified in class 502, subclass 152 inter alia.

3. Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a pigment for ultraviolet-visible light filters, and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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5. During a telephone conversation with Rose Thiessen, Esq., on 4/1/04, a provisional election was made without traverse to prosecute the invention of group II, claims 4-10 and 15-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-3 and 11-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

7. Claims 4-10 and 15-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. All the independent claims recite that the silica support has Si-Si single bonds which are further bridged by epoxy oxygen atoms. However, the routineer in the art is familiar with the stability of silicon-oxygen bonds alone and that Si-Si bonds themselves are generally unstable, certainly compared to Si-O bonds. Hence it is unclear that applicants are in possession of the invention as claimed. In addition, applicants assert that the surface silicon atoms of their support have Si-OA' moieties. There does not appear to be any physical evidence of the presence of such moieties. In addition, when A' is a group having as the free valence bonded to the oxygen atom of the Si-OA' moiety an oxygen atom, that would make the surface

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species a peroxide, another comparatively unstable species whose presence appears to be merely hypothesized rather than demonstrated by physical evidence.

8. Claims 4-10 and 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, formula of the second line, the CH<sub>2</sub> group not directly bonded to the silica oxygen appears to have a pentavalent carbon atom, which is highly unlikely. In l. 4 and 8 change "can be" to --are-- for definiteness, and change "comprises" to --comprise-- for the plural form of the verb. In l. 10-11, the "wherein" clause is clearly missing some words including a verb and object. In l. 12 change "can be" to --are-- and "is" to --are--. In the entire clause defining A' it is not clear where the free valence that bonds to the surface oxygen atom is, although the structures appear to be e.g. for methoxymethyl CH<sub>3</sub>OCH<sub>2</sub>-. In l. 14 "ethoxyethyl" should be --ethoxyethyl--. Claim 7 suffers from similar problems as those noted above for claim 4.

Further in claim 7, the first chemical structure should have a number 7 to its right to clearly label it as formula 7, and in the third and fourth text lines from the end change "silica atom" to --silicon atom--.

In claim 15, to the right of the first chemical structure add the numeral 1, to the right of the second add the numeral 2 and to the right of the third add the numeral 6. In text line 7 (first line after structure 2) "at least one hydrogen atom of R<sup>1</sup>, R<sup>2</sup> and D" lacks antecedent basis since it has not yet been recited that each of these groups in fact has a hydrogen atom, and the clause is currently written as if each of them has a position substituted by formula 6 due to "and" being

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the conjunction. In lines 11, 26 and 39, change "can be" to --is--. In l. 19 correct the spelling to --phosphine--. In l. 21 delete the last "a", and in l. 22 change from singular to plural --bonds--. In l. 23-24, 27-28, 40-41 and 43-45, not each of the groups recited is capable of existing as a C<sub>1</sub> moiety; in fact the aryl ones need at least 6 carbon atoms, and the mixed alkylaryl ones need at least seven carbon atoms; the unsaturated noncyclic groups need at least two carbon atoms. In l. 32 "z is a valence number of J, provided that" is actually redundant with the following definitions of the values of J and z. In l. 37 structure 6 leaves the right C atom undefined if it is not in fact carbon and undercoordinated if it is in fact a carbon atom. In l. 38 insert --an-- after "Z is". In l. 45 depending on the identity of the C group in the structure, with the alkoxy groups or thio groups there is a potential for the existence of O-S, O-O, S-S or S-O linkages in structure 6. Throughout this group of claims the variable Y is used to mean something other than its universal chemical definition as the symbol for the element yttrium; another symbol should be selected. The problems noted above for claim 15 also exist in claim 20.

Further in claim 20, in the last three lines "silica atom" should be --silicon atom--.

In claim 16 the cycloalkyl, aryl, alkenyl, alkylaryl, arylalkyl, and arylalkenyl groups cannot have one as their lowest number of carbon atoms.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4-10 and 15-20 are rejected under 35 U.S.C. 102(a) as being anticipated by each of Lee, J. Organomet. Chem., vol. 552 (1998), pp. 313-317 (hereafter referred to as Lee I) and Korean Laid-Open Patent 98-25282 (hereafter referred to as Lee II).

Lee I discloses the invention as claimed (figure 1; experimental section). Lee II also discloses the invention as claimed (abstract; reaction formula 4; top reaction p. 9-2).

12. Claims 4-6 and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by EPO 0 293 815 (hereafter referred to as Antberg).

Antberg discloses the invention as claimed (structures, pp. 3, 4, 7).

13. Claims 4-6 and 15-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over McNally, USP 5,767,209 (hereafter referred to as McNally).

McNally discloses the invention substantially as claimed (structures having terminal methoxy groups of figures 1 and 2; col. 4, l. 48-58).

McNally lacks clear disclosure that the compounds it forms with silica having surface hydroxy or oxy-groups have the structures of the present invention.

However, it would have been clear to one of ordinary skill in the art that surface hydroxy or oxy groups would have been able to react with the terminal methoxy groups of the McNally

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metallocenes to form surface oxygen-bonded metallocenes immobilized on silica with production of methanol or surface methoxy groups on the silica.

Since the prior art appears to describe and teach the invention as claimed on the basis of inherent property characteristics which either anticipate or render obvious the claimed product, an alternative 102/103 rejection is deemed appropriate, and the burden of proof that it does or does not shift to applicants as in *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

14. Claims 7-10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNally as cited above.

The disclosure of McNally has been discussed above.

McNally lacks disclosure of the reaction between a functionalized metallocene and a silica surface oxide as the necessary reactants to form the product in the process as claimed.

However, one of ordinary skill in the art, knowing that silica possesses surface oxide groups, would have recognized that forming Si-O bonds between silica and metallocenes with terminal alkoxy groups, and Si-O-C groups from the same reactants, would have formed stable species having Si-O bonds and thus that such a reaction would likely have been thermodynamically favored.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of McNally with a reasonable expectation of obtaining a highly-useful method of making a supported catalyst with the expected benefit of the catalyst formed having greater flexibility in its use in gas phase polymerization processes.

15. Claims 4-10 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over EPO 0 839 836 (hereafter referred to as Sancho Royo).



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Sancho Royo discloses the invention substantially as claimed (abstract; col. 3, l. 15-28; examples).

Sancho Royo lacks explicit disclosure of the fact that the metallocenes therein are bonded to the support as well as the method of making the supported metallocenes.

However, one of ordinary skill in the art would have recognized that surface hydroxyls and oxides of silica would have reacted with metallocenes having functionalized Cp groups as disclosed by Sancho Royo to achieve the presently-claimed invention.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Sancho Royo with a reasonable expectation of obtaining a highly-useful catalyst and method of making it with the expected benefit of obtaining a catalyst useful in heterogeneous polymerization processes.

16. Claims 4-10 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Llinas et al., US Pre-Grant publication 2003/0144135 A1 (hereafter Llinas).

Llinas discloses the invention substantially as claimed (paragraphs 0012; formulas of pp. 2-17).

Llinas lacks explicit disclosure of the fact that the metallocenes therein are bonded to the support as well as the method of making the supported metallocenes.

However, one of ordinary skill in the art would have recognized that surface hydroxyls and oxides of silica would have reacted with metallocenes having functionalized Cp groups as disclosed by Llinas to achieve the presently-claimed invention.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Llinas with a reasonable expectation of obtaining a highly-useful catalyst and

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method of making it with the expected benefit of obtaining a catalyst useful in heterogeneous polymerization processes.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is 571-272-1375. The examiner can normally be reached on M-F from 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at 571-272-1362. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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4/5/04

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